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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,855

05/17/2006

Takayuki Araki

Q94609

8089

23373 7590 06/23/2009
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

JOHNSON, CONNIE P

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

06/23/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,855	Applicant(s) ARAKI ET AL.	
	Examiner CONNIE P. JOHNSON	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 11-13, 15-18 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 11-13, 15-18 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/4/2009 has been entered.

Response to Amendment

2. The remarks and amendment filed 6/4/2009 have been entered and fully considered.
3. Claims 1-4, 11-13, 15-18 and 21 are presented.
4. Claim 21 is new.
5. Claims 1, 2 and 13 are amended.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-4, 11-13, 15-18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunsvold et al., U.S. Patent No. 6,057,080 in view of Araki et al., U.S. Patent No. 7,214,470 B2.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Brunsvold teaches a top antireflective layer comprising an ammonium or amine compound (col. 3, lines 65-67 and col. 4, lines 1-7). Example 5 of the reference shows a method of making a patterned photoresist composition by applying a photoresist to a silicon substrate and overcoating the photoresist with the antireflective film of example 3. Brunsvold teaches using perfluorinated polymers in the top antireflective layer for ease of removal with an alkaline developer. Water is used as a solvent in the antireflective layer as shown in example 2 (col. 4, lines 65-67). The polymer solution has a water content of 95% by weight of the composition. Brunsvold does not teach that the fluorinated polymer comprises the formula as in present claim 13.

However, Araki teaches fluorinated polymers with a structure as in formulas (1) and (14). The fluorinated polymers may be used as a base polymer in an antireflective coating (abstract). Araki also teaches that the fluorinated polymers have a molecular weight of 500 to 1,000,000 (col. 12, lines 11-12). The -COOH and -OH groups in the fluorinated polymer have a pK_a value of less than 10 (col. 31, lines 1-9 and experimental example 2). The fluorinated polymers comprise -OH and -COOH groups (col. 13, lines 5-10). The base polymer structure (15) has a fluorine content of 60% by mass, based on the molecular weight and has 0.26 moles of -COOH per 100g of the fluorinated polymer when Z^2 is -COOH . The fluorinated polymer in column 13, line 10 meets the limitations of formula (5-1) in present claim 13. The fluorinated polymer has the following formula ($\text{CH}_2=\text{CFCF}_2\text{-OR}_f\text{-Z}^2$), wherein R_f is a fluorine containing alkylene group having 1 to 40 carbons or 2 to 100 carbon atoms and an ether bond. Z^2 is a -COOH group (col. 13, lines 1-13). The M1 formula is present in an amount of not less than 30mol% (col. 29, lines 7-11). It would have been obvious to one of ordinary skill in the art to use the fluorinated polymers of Araki in the antireflective layer of Brunsvold to maintain a low refractive index and improve optical characteristics as taught by Araki (col. 18, lines 61-65 and abstract).

Response to Arguments

8. Applicant's arguments filed 6/4/2009 with respect to the rejection(s) of claim(s) 1-4, 11-13 and 15-18 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made herein.

9. Applicant argues that Brunsvold teaches other means to overcome deficiencies of solubility and strippability in an aqueous media by other means without the use of fluoropolymers with an ideal refractive index (1.3-1.4).

10. Applicant is directed to col. 3, lines 50-67 and col. 4, lines 1-36 wherein Brunsvold teaches a multicomponent system for the antireflective film. The multicomponent system comprises a fluoroalkyl carboxylates (col. 4, line 31). Therefore, Brunsvold teaches the carboxy functionalized fluoroalkyl polymers with a low refractive index.

11. Applicant argues that the present application discloses preparation example 2 and preparation example 3 wherein preparation example 3 is not within the scope of the invention.

12. The fluorinated polymer in preparation example 3 has .135 moles of -COOH in the hydrophilic group. Instant claim 1 recites an amount of 0.14 moles, which is equivalent to 0.135 moles when rounded to two decimals as in instant claim 1.

Therefore, it is unclear why applicant is arguing the moles of -COOH in preparation example 3. In addition, Araki teaches the hydrophilic group is present in an amount of 0.26 moles, which is within the claimed range.

13. In experimental example 6, the pK_a of the hydrophilic group is 12.6, which is not within the range as claimed. Although Brunsvold may not teach the specific fluoroalkyl carboxylates as claimed, it would have been obvious to modify the Brunsvold reference with the fluoroalkyl polymers of Araki to maintain a low refractive index and improve optical characteristics of the antireflective film.

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14. Applicant argues that the instant invention discloses critical amounts of the hydrophilic group -COOH with a pKa of less than 11. Further, that in the experimental example 6, wherein preparation example 3 is used, the coating is "insoluble" in developing solution.

15. Applicant argues that Araki does not teach the criticality of using a hydrophilic group with a pKa of less than 11 and in an amount of no less than 0.14 moles.

16. Araki teaches an antireflective film with the fluoroalkyl polymer with the amount of hydrophilic group Y as claimed. Although Araki may not specifically teach the criticality of the amount of the hydrophilic group, Araki still teaches the amount Within the claimed range.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Connie P. Johnson
Examiner
Art Unit 1795

/Cynthia H Kelly/

Supervisory Patent Examiner, Art Unit 1795